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APPLICANT : NISSAN MOTOR CO LTD;

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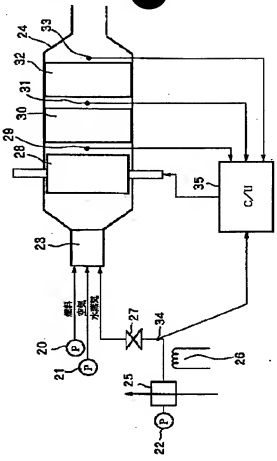
TITLE : REFORMING REACTION APPARATUS AND REFORMING SYSTEM



ABSTRACT : PROBLEM TO BE SOLVED: To shorten the starting-up time of a reforming reaction at the time of starting-up a reforming reaction apparatus for producing hydrogen by reforming a hydrocarbon based fuel.

SOLUTION: A catalytic heater 28 formed by carrying an exothermic catalyst for promoting heat generation by the catalytic combustion on a heat generating body (electric heater), a honeycomb catalyst 30 on which mainly a partial oxidation reaction occurs and a honeycomb catalyst 32 on which mainly a self-heating reforming reaction occurs are arranged in the reforming reaction apparatus 24 for forming hydrogen by the reforming reaction by the supply of the fuel, air and steam, and the supply of the fuel, air and steam and the current to the catalytic heater 28 are controlled while detecting each catalyst outlet temperature with thermocouples 29, 31 and 33 by a control unit 35.

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FS - CPI;EPI
IC - C01B3/32 ; C01B3/38 ; H01M8/04 ; H01M8/06
MC - E31-A02 H04-C02 H04-E06 H04-F02C H04-F02E L03-E04
- X16-C09
M3 - [01] C101 C550 C810 M411 M424 M720 M740 M904 M905 N120 N212 N224 N242 N262 N411 N441 Q413 Q454; R01532-K R01532-P; 1532-P 1532-U
- [02] M220 M222 M231 M320 M416 M610 M620 M730 M904 M905; R08433-K R08433-S
- [03] H4 H401 H481 H8 M210 M211 M272 M281 M320 M416 M620 M730 M904 M905 M910; R00270-K R00270-S; 0270-S 0270-U
- [04] C108 C550 C810 M411 M781 M904 M905 M910 Q507 R013; R01779-K R01779-U; 1779-U
PA - (NSMO) NISSAN MOTOR CO LTD
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PR - JP20000347217 20001114
XA - C2002-159572
XIC - C01B-003/32 ; C01B-003/38 ; H01M-008/04 ; H01M-008/06
XP - N2002-444664
AB - JP2002154805 NOVELTY - A catalyst heater (28) supports a hot honeycomb catalyst (30) which accelerates exothermic reaction with a fuel and a reformation honeycomb catalyst (32) which accelerates reformation reaction.
- DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for the modification system which has a electric heater (26) and a control system that controls the supply of fuel, air and water into a reformation reaction apparatus which is based on the temperature condition of the catalyst at the time of start up of the reaction. The fuel and air are supplied to the reformation reaction apparatus with the air fuel ratios set for the catalyzed combustion if the honeycomb catalyst (30) reaches the catalyzed combustion start temperature or for the oxidation reaction if the honeycomb catalyst (32) reaches the oxidation reaction start up temperature. The fuel, air and water vapor are supplied at a set ratio for self-heating reformation reaction if the honeycomb catalyst (32) reaches the self-heat reformation reaction start temperature.
- USE - For fuel reformation such as for petrol, light oil, methanol, CNG, naphtha, etc.
- ADVANTAGE - Sets reaction conditions according to the start conditions, improving hydrogen formation.
- DESCRIPTION OF DRAWING(S) - The figure shows the composition of the modification system. (Drawing includes non-English language text).
- Electric heater 26
- Catalyst heater 28
- Honeycomb catalyst 30,32
- (Dwg.1/5)
CN - R01532-K R01532-P R08433-K R08433-S R00270-K R00270-S R01779-K R01779-U
DRL - 1532-P 1532-U 0270-S 0270-U 1779-U

IW - FUEL REFORM REACT EQUIPMENT CATALYST HEATER HOLD HOT CATALYST ACCELERATE EXOTHERMIC REACT FUEL

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NC - 001

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PAW - (NSMO) NISSAN MOTOR CO LTD

TI - Fuel reformation reaction equipment includes catalyst heater that holds hot catalyst which accelerates exothermic reaction with fuel